

EDWARD D BRUFFEY III

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SKILLS

Technical Skills	Infrared spectroscopy, Thermal gravimetric analysis, Differential scanning calorimetry, Nuclear magnetic resonance spectroscopy, Scanning electron microscopy, Solid state and wet chemical synthesis, High pressure gas systems, High purity fluid systems, Electronic measurement systems, Data acquisition and processing systems, Scientific data analysis and reduction, Data management, Scientific reports
Software	LabView, LaTeX, Inkscape, FreeCAD, Microsoft Office Suite, Github
Programming	Python, Java, CSS
Soft Skills	Problem solver, Team player, Adaptable, Excellent oral and written communication skills

EXPERIENCE

Graduate Research Assistant Aug 2021 - Dec 2023
Hawaii Natural Energy Institute *Honolulu, HI*

- Designed and fabricated a lab-scale forward osmosis water purification test stand and system with automated data collection gaining extensive hands-on experience, deepening my understanding of mechanical fluid pumping systems and equipment within a research laboratory setting.
- Conducted comprehensive graphical and statistical analyses of gathered data to enhance the efficiency of the forward osmosis system while mitigating systemic errors
- Created a Python dashboard for convenient data visualization and analysis.
- Communicate with professional engineers when deciding on parts and best practices.
- Collaborate with the Nanosystems Lab to synthesize nano-material thin films as a viable hydrogen storage material by means of ultrasonication, ball milling and heat treatment.
- Train undergraduate student employees on all laboratory equipment procedures and safety.
- Perform general lab manager duties such as ordering supplies from vendors, managing material waste disposal following EHSO guidelines, maintaining a lab schedule with undergraduate students, create a maintenance schedule for equipment and perform maintenance on all lab equipment in a timely manner.

Undergraduate Research Assistant Apr 2018 - Aug 2021
Hawaii Natural Energy Institute *Honolulu, HI*

- Synthesized and characterized novel metallo-ionic liquids for acidic gas capture by means of solid state and wet chemical synthesis.
- Conducted tests to assess the sorption capabilities of materials for acidic gases (SO₂ and H₂S) using the Kuleana test-stand, with system control and data acquisition managed through LabView software. Acquired extensive expertise in operating and optimizing this system throughout the testing process.
- Assisted in the synthesis and analysis of boron-containing hydrogen storage materials.
- Perform high pressure hydrogenations of synthesized materials utilizing a Parr reactor.
- Utilize python for data analysis and producing publication quality figures.
- Train new undergraduate employees in lab safety.

Carpenter May 2014 - Aug 2016
Booth Construction LLC *Haleiwa, HI*

- Oversee that daily task were completed in a timely manner.
- Planned out weekly goals and communicate those goals to fellow employees.

Carpenter

Landmark Builders LLC

May 2009 - Jan 2014

Haleiwa, HI

- Performed all duties required of a professional carpenter building custom homes.
- Work closely and collaborate with team members.

Apprentice Carpenter

Cutwater Builders LLC

June 2005 - Mar 2009

Haleiwa, HI

- Worked alongside professional carpenters and performed all duties required of an apprentice carpenter.
- Learned the true meaning of physical hard work and how to be a dependable employee.

EDUCATION

Master of Science Mechanical Engineering, University of Hawai'i at Manoa

2021 - 2023

Bachelor of Science in Chemistry, University of Hawai'i at Manoa

2017 - 2021

AWARDS AND CONFERENCES

- Awarded funding through the Graduate Student Organization at the University of Hawai'i at Mānoa to attend and present at the 13th World Filtration Congress.
- Presented a student poster at the 13th World Filtration Congress, focusing on a segment of my Master's thesis titled "The Fabrication and Performance Testing of a Forward Osmosis Water Purification System and The Synthesis of Boron-Containing Nanomaterials."

PUBLICATIONS

1. Pham N.K. T., **Bruffey E.**, Nguyen T. A., Maldonado-Rivera A. R., Kuo Y.D., Cossairt B., Lee W., Severa G., Brown J. J., (2023) Deposition of Ultrathin MgB_2 Films from a Suspension Using Cosolvent Marangoni Flow, *Langmuir*, [10.1021/acs.langmuir.2c02933](https://doi.org/10.1021/acs.langmuir.2c02933)
2. Severa G., **Bruffey E.**, Nguyen Q. H. P., Gigante A., Leick N., Kelly C., Finkelstein J. G., Hagemann H., Gennet T., Rocheleau E. R., Dera R., (2021) $Fe_4(OAc)_{10}[EMIM]_2$: Novel Iron-Based Acetate EMIM Ionic Compound, *ACS Omega*, [10.1021/acsomega.1c04670](https://doi.org/10.1021/acsomega.1c04670)
3. Dera P., **Bruffey E.**, Finkelstein J. G., Kelly C., Gigante A., Hagemann H., Severa G., (2020) Synthesis, Characterization and Crystal Structures of Two New Manganese Aceto EMIM Ionic Compounds with Chains of Mn^{2+} Ions Coordinated Exclusively by Acetate, *ACS Omega*, [10.1021/acsomega.0c01820](https://doi.org/10.1021/acsomega.0c01820)

EXTRA-CURRICULAR ACTIVITIES

- Playing music, guitar being my favorite instrument.
- Dirt biking and anything to do with being outdoors and in the mountains.
- Currently developing a text-based adventure/puzzle game in Python.